Bridge Repair Traffic Design Options
DRAFT March 14, 2018

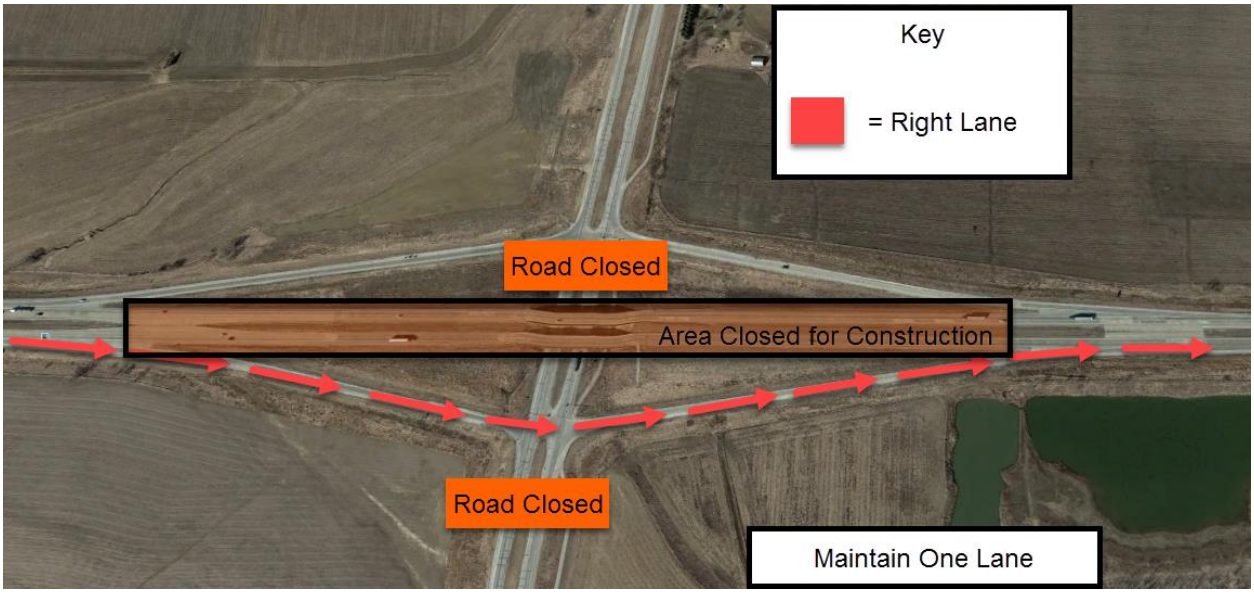
A. Close diamond interchange bridge for repair

Involves using ramp to detour mainline traffic.

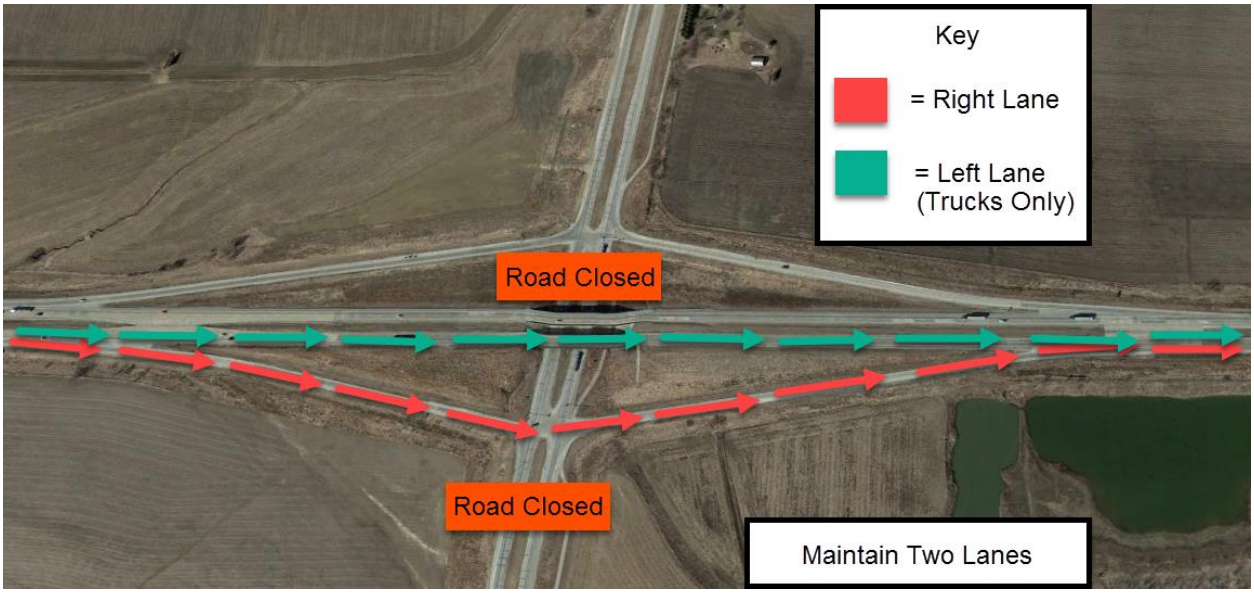
This option has very limited applicability based on the following conditions:

- Limited to one day only during daylight hours (½ hour after sunrise to ½ hour before sunset).
- Requires closing and detouring cross road.
- Extra-enforcement required at ramp terminals on cross road.

Maintain One Lane



Maintain Two Lanes

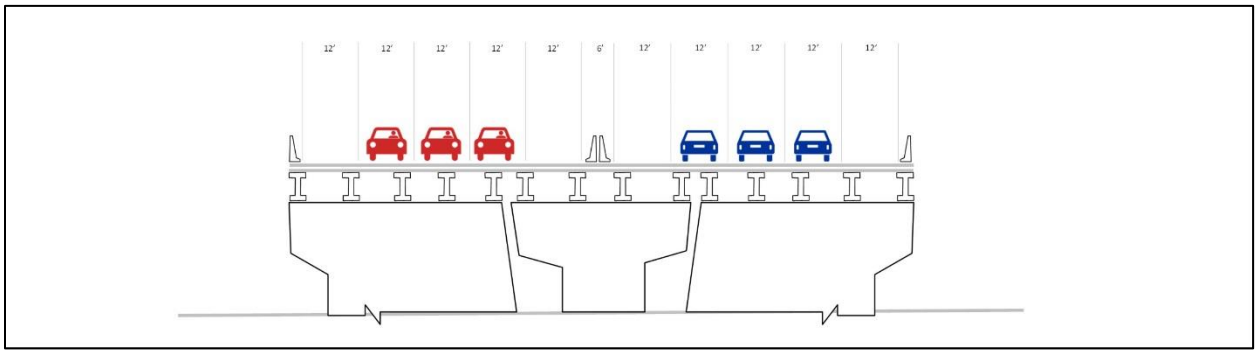


B. Widen Bridge

Maintains existing number of lanes on the bridge.

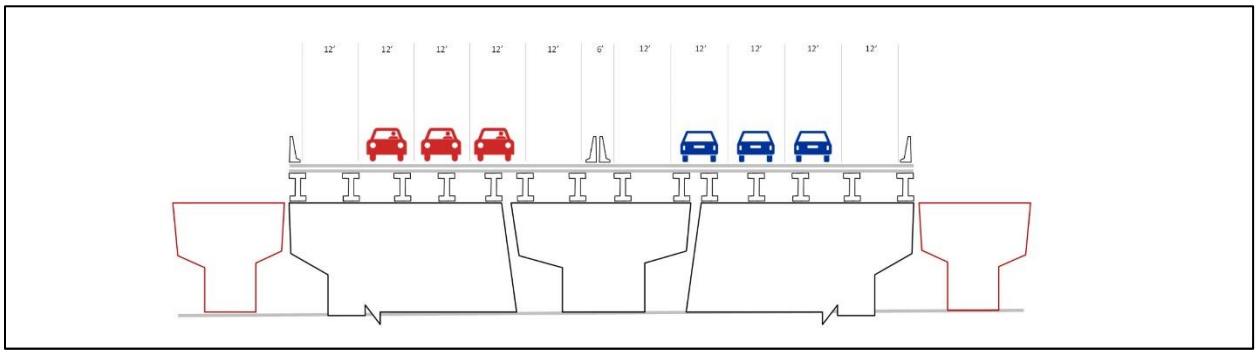
EXISTING BRIDGE CROSS SECTION

For this example, the existing cross-section of the bridge and roadway is 36 feet wide with 12 foot wide full depth shoulders. Median concrete barrier divides the opposing lanes.



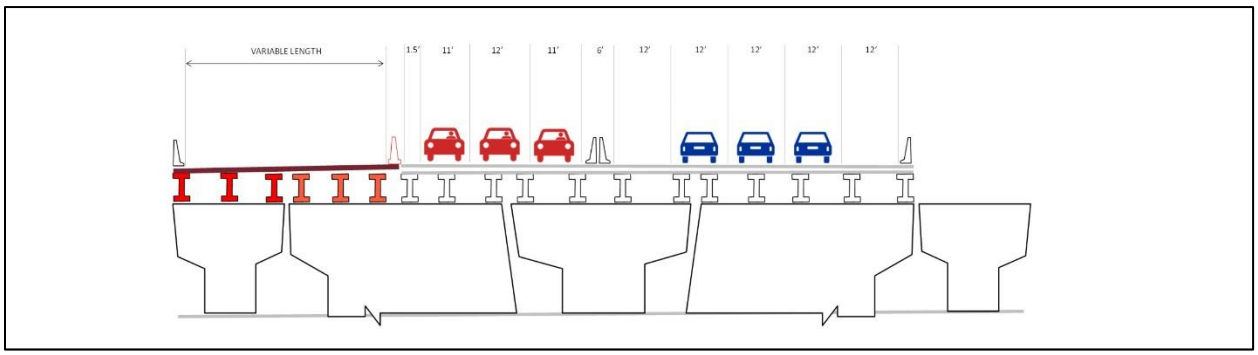
STAGE 1

Construct bridge supports for the new structure and perform grading required to widen the existing embankment.



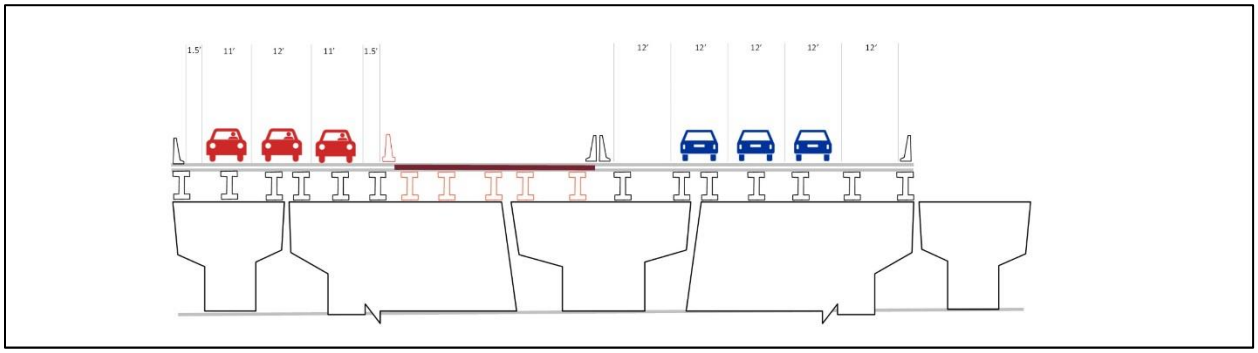
STAGE 2

Shift traffic to the inside. The existing bridge will be widened, and the outside of the existing bridge deck will be replaced. This stage allows existing bridge beams to be replaced as needed.



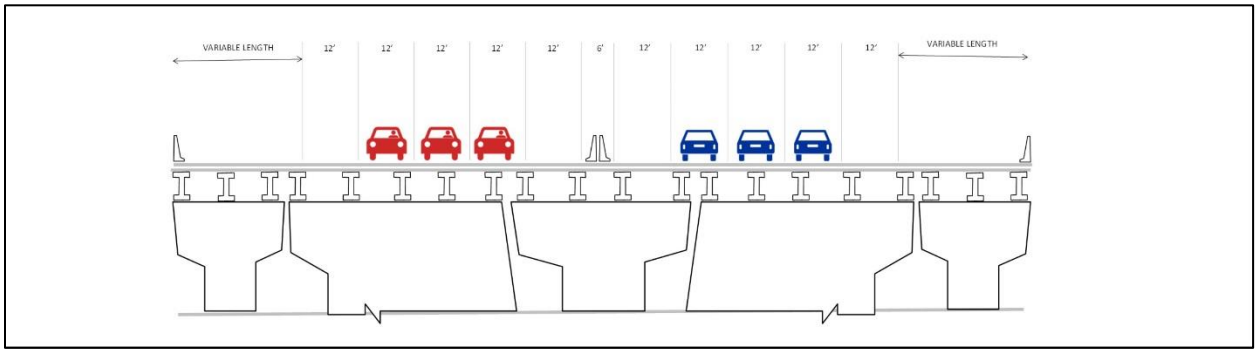
STAGE 3

Traffic is shifted to the outside using the newly constructed portion of the bridge. The remaining original beams may be replaced, and the remaining deck replaced. When completed traffic can return to the normal lanes.

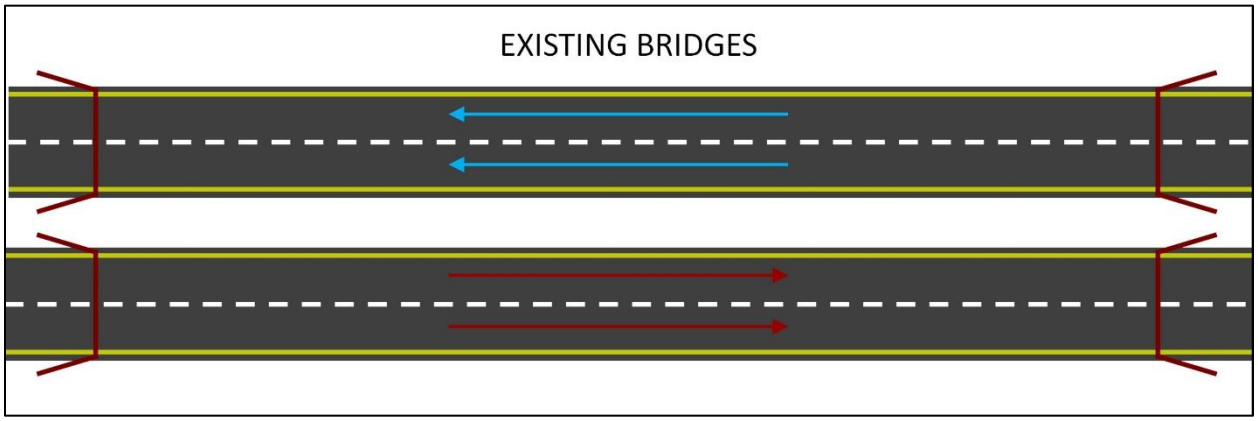


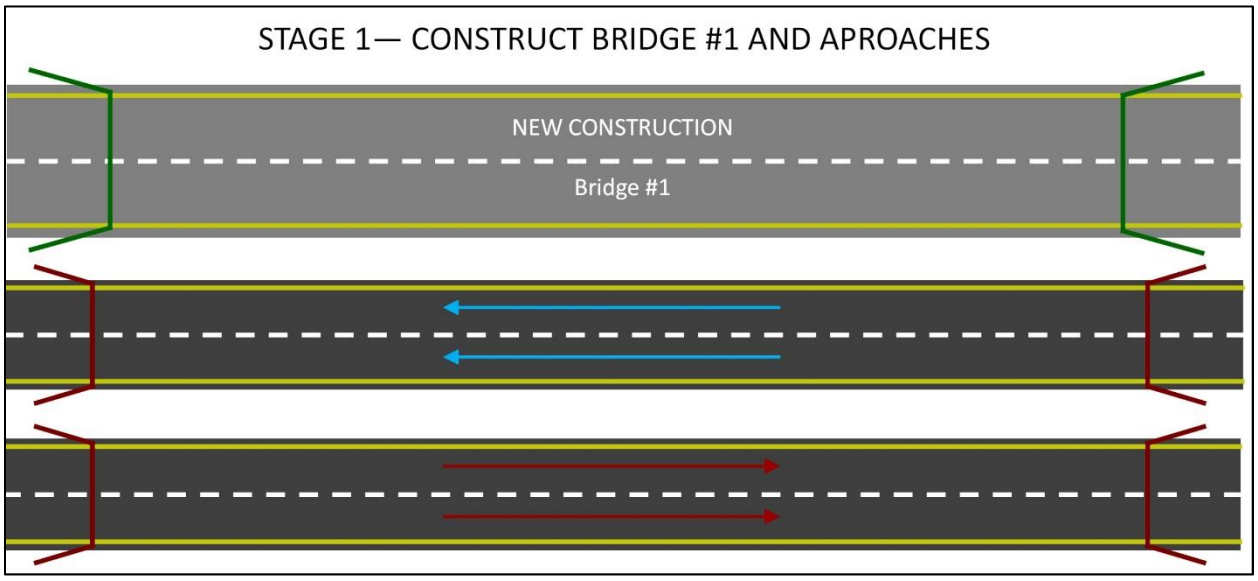
STAGES 4 AND 5 for the opposite direction can be done concurrently or following STAGES 2 AND 3.

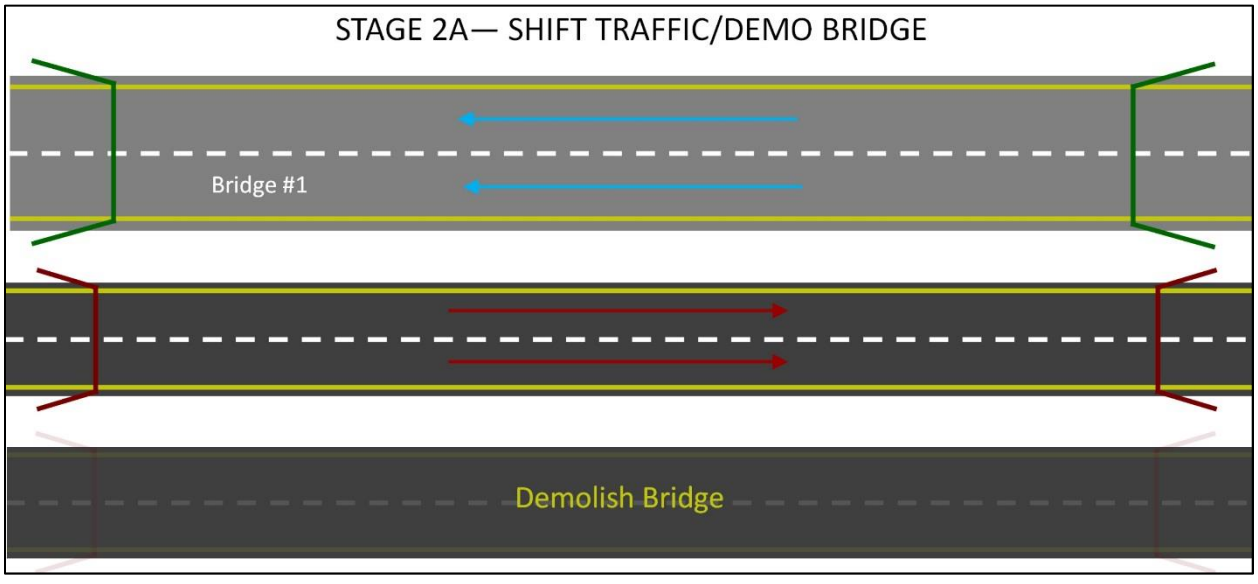
FINAL BRIDGE CROSS SECTION



C. New Bridge (off alignment)







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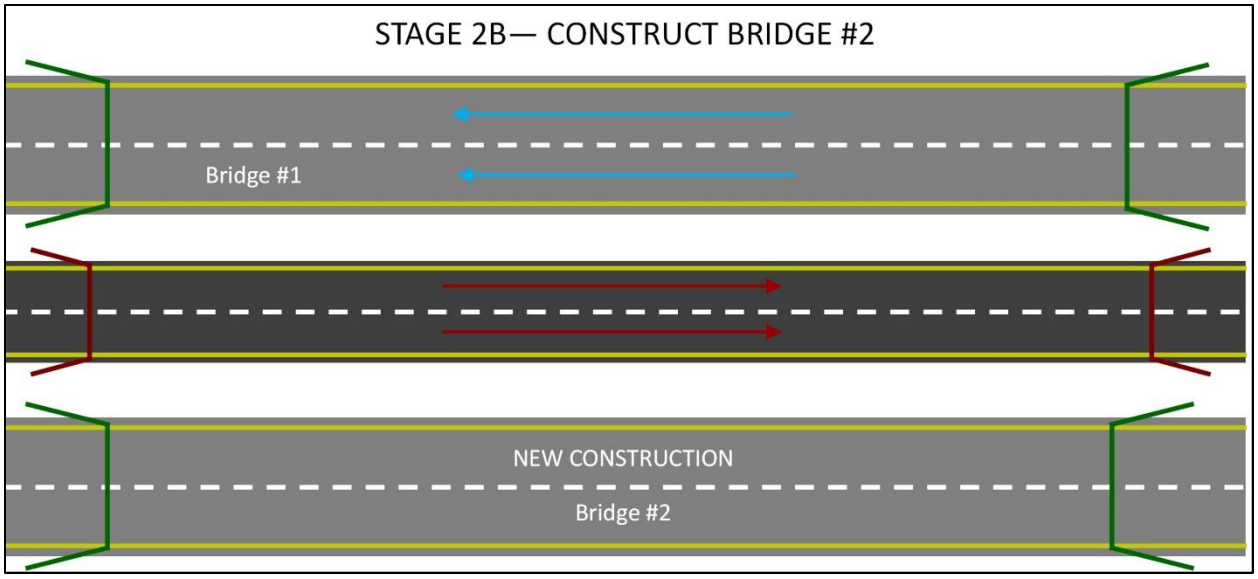
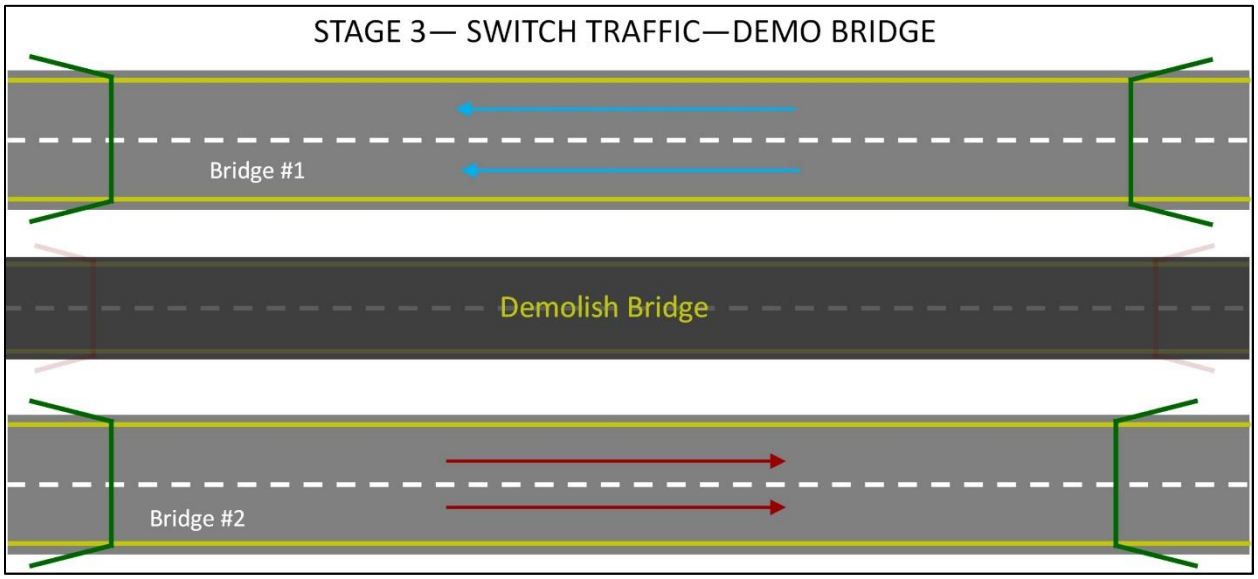




D. Build Box Culvert (RCB) Flowable Mortar Option

The existing bridge is not removed.

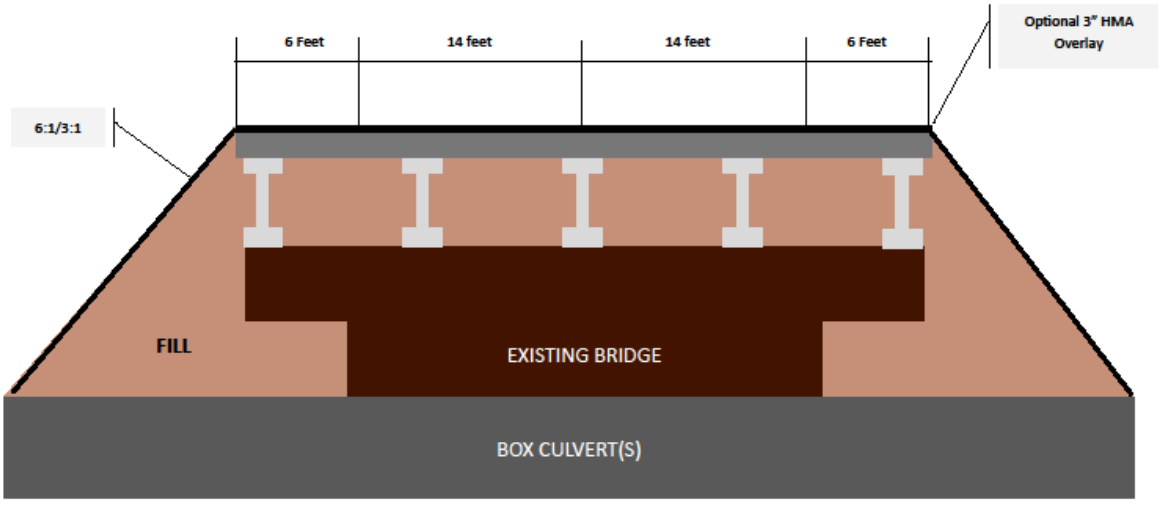
The typical cross section adjacent to the bridge will consist of a 28 ft. roadway with 6 ft. shoulders.

The new RCB can be built under the existing bridge without disturbing the bridge. After the culvert has been constructed, flooded granular backfill and flowable mortar will be used to fill the void between the RCB and bridge deck. Once the new 6:1/3:1 foreslopes have been placed adjacent to the bridge, the existing concrete bridge barrier, curb, and guardrail can be removed.

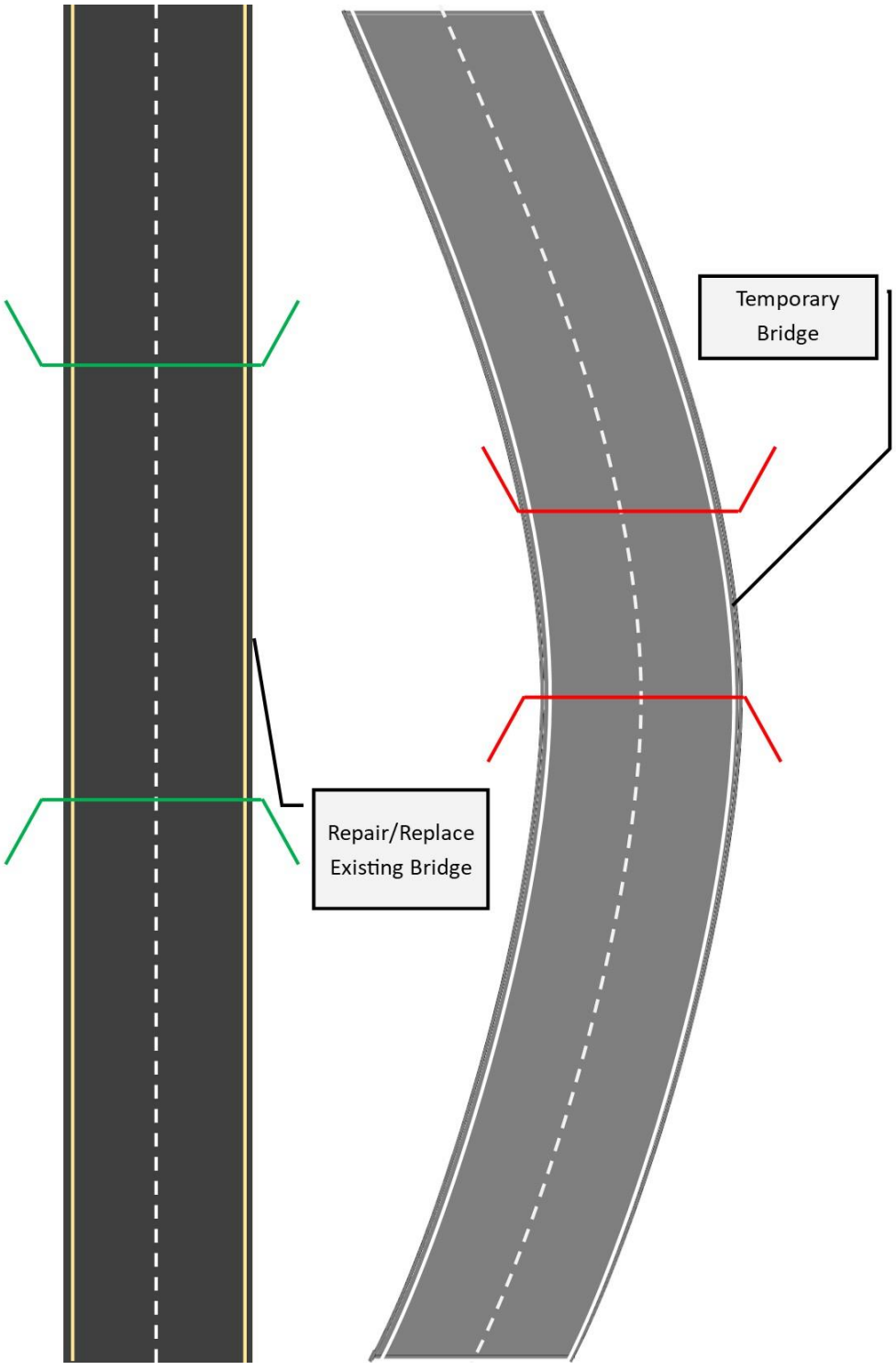
A three (3) inch HMA overlay will be placed from bridge approach to bridge approach with a 50':1" taper to transition down to the existing pavement.

Right of way will be required for this project.

Traffic will be maintained at all times. However, it will be necessary to reduce traffic to one lane via the use of flaggers during the removal of the bridge rail, guardrail, placement of the flowable mortar, and the HMA overlay.

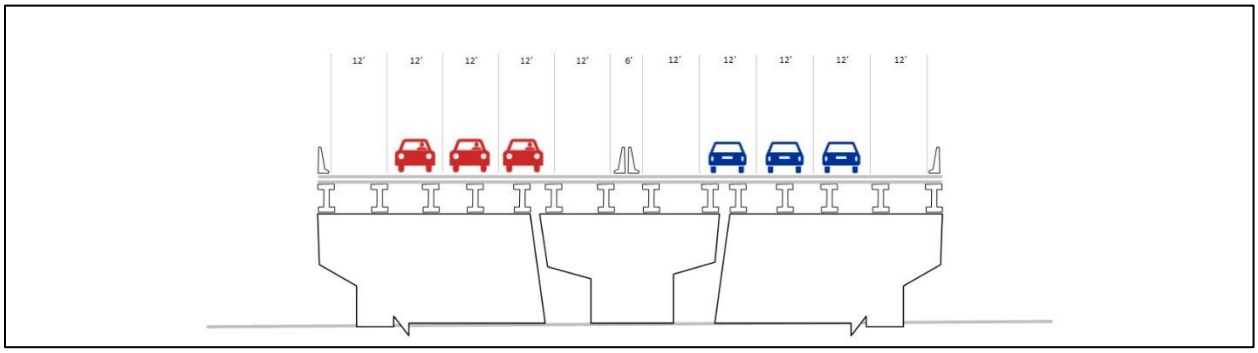


E. Build Temporary Bridge

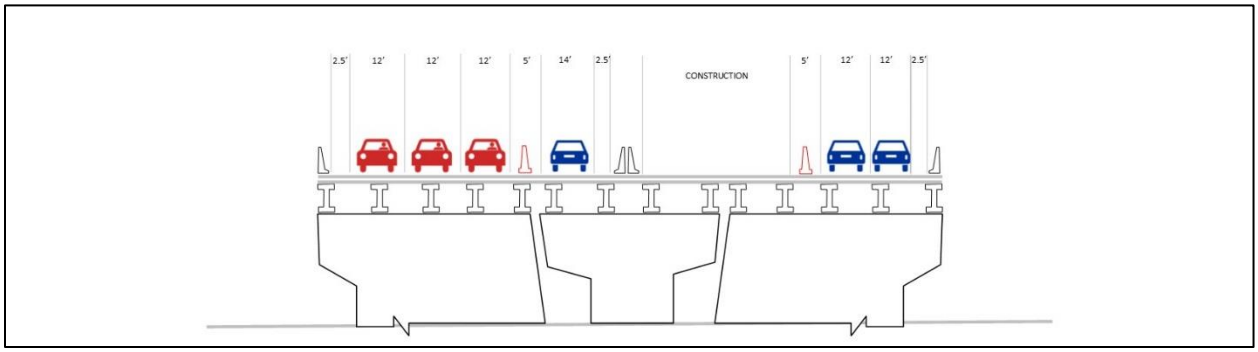


F. 2:1 or 3:1 Split (Put one lane of traffic contraflow on opposing side)

Original Cross Section

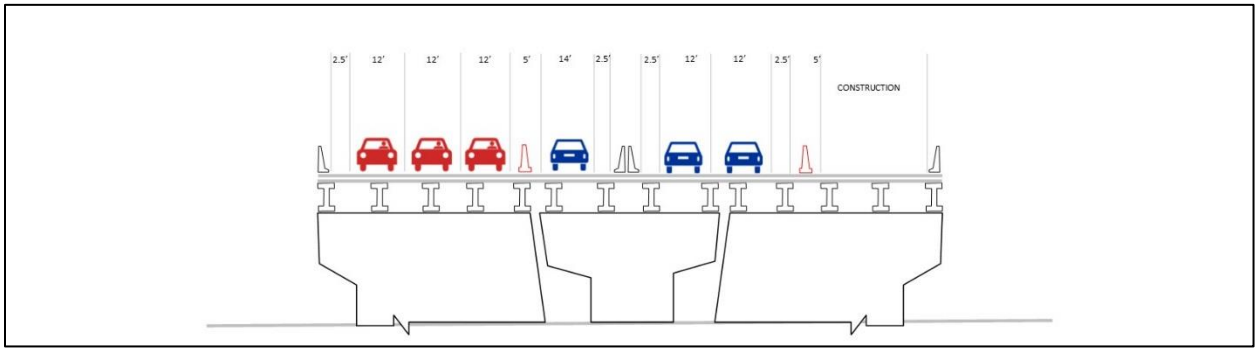


STAGE 1



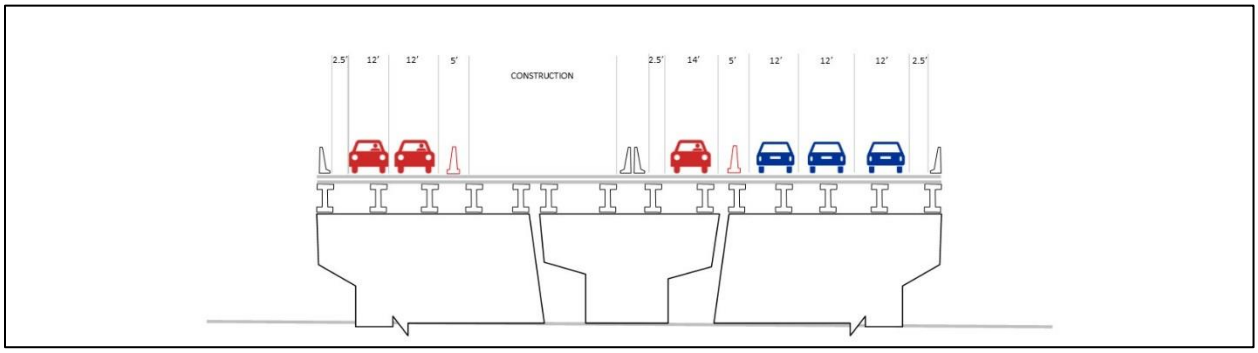
For Stage 1 TBR is installed the length of the project on both roadways to separate traffic in opposite directions and separate traffic from the work space.

STAGE 2



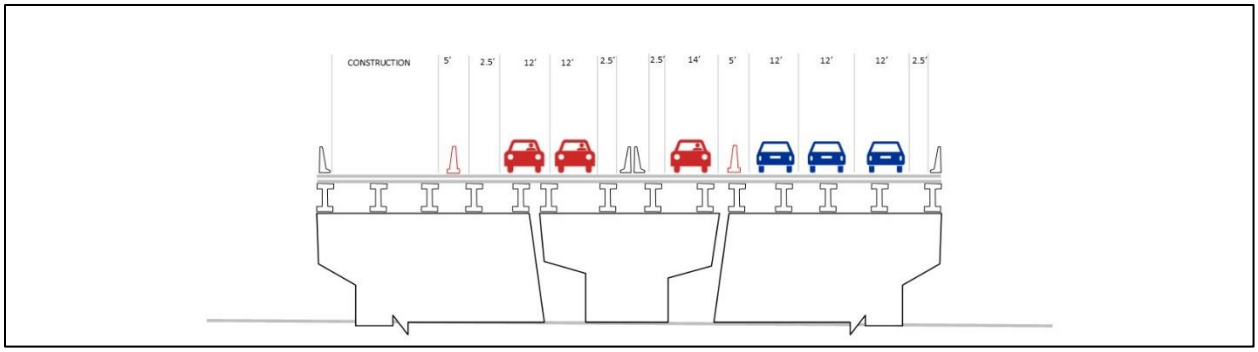
Once reconstruction is complete in Stage 1, the TBR is relocated and traffic switched onto the new pavement section.

STAGE 3



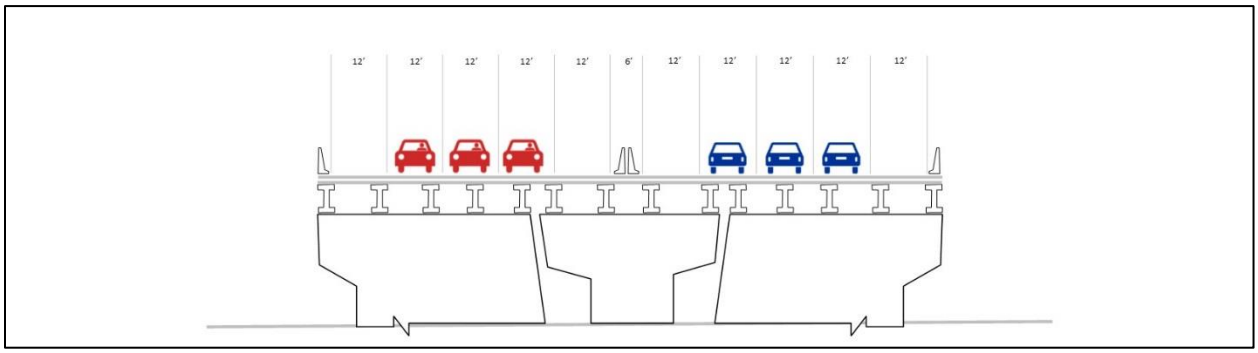
When reconstruction is completed for Stages 1 and 2, traffic is switched to the other roadway. Stage 3 is the mirror of Stage 2 and Stage 4 is the mirror of Stage 1. Note, the TBR does not have to be relocated for the traffic switch from Stage 2 to Stage 3.

STAGE 4



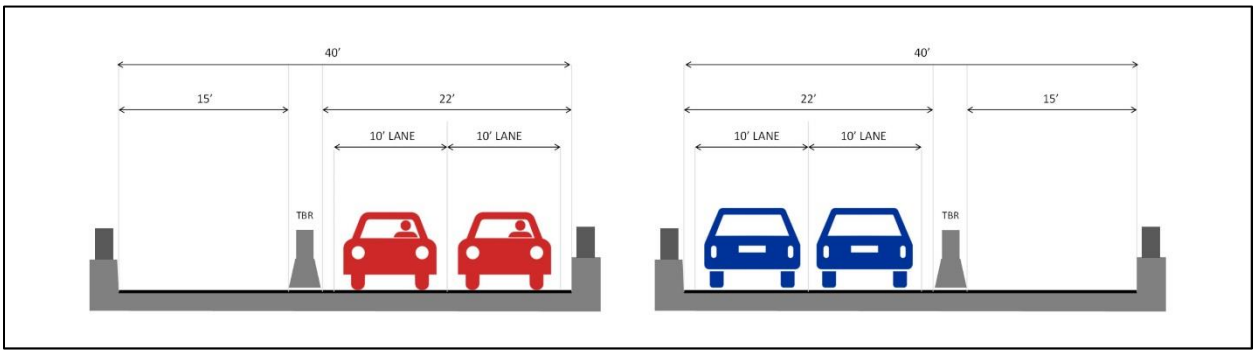
Once reconstruction is completed on both roadways traffic is returned to the normal configuration on the final section which is similar to the existing section.

Final Cross Section



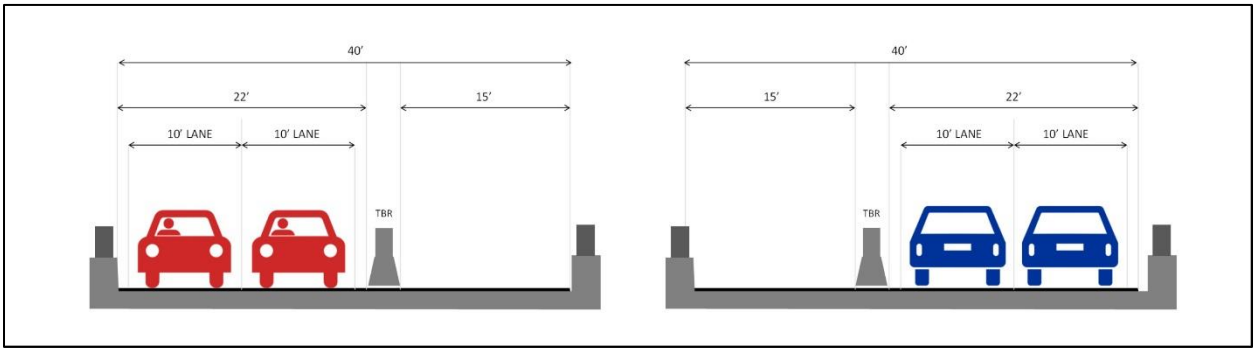
G. 3 Stage Bridge Construction

STAGE 1

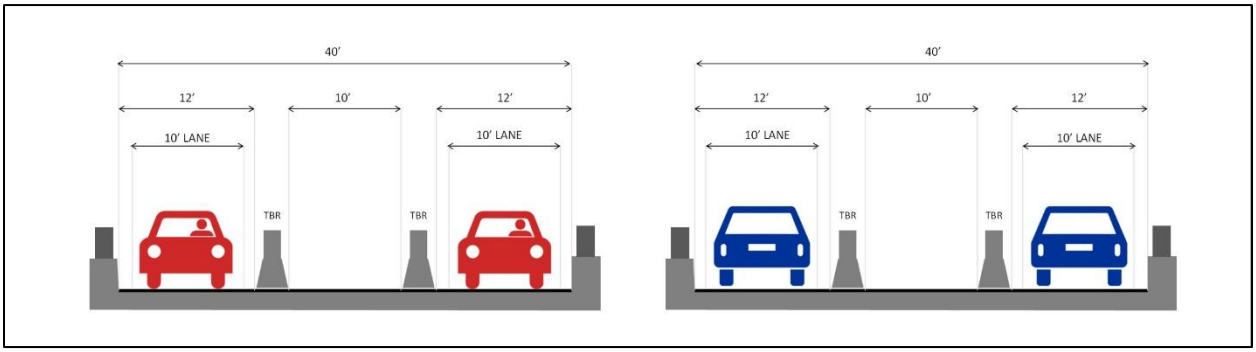


For Stage 1and 2 TBR is installed the length of the project (bridge) on both roadways to separate traffic from the work space.

STAGE 2



STAGE 3



For Stage 3 additional TBR is needed to separate traffic from the work space.